

HYGIENIC PUMPS

clean and safe in real life

2018 | 1



» All about your flow

www.tapflo.com

All about your flow

Tapflo is a leading pump manufacturer with the ambition to provide a wide range of premium products for various industrial applications. We focus on delivering the best fluid processing solutions and support on all stages of the process, worldwide.



About Tapflo

Tapflo is an independent, Swedish, family owned manufacturer and global supplier of air operated diaphragm pumps, centrifugal pumps and other industrial process equipment. The company was founded in Kungälv, Sweden in 1980 and has since then been working with design and manufacture of thermoplastic, metal and sanitary series diaphragm pumps, as well as the complete range of centrifugal pumps and industrial equipment. After years of dynamic development, the company evolved into Tapflo Group with worldwide operations. Tapflo Group is represented by owned companies and independent distributors all over the world on 6 continents.

Quality certified

At Tapflo, we believe that quality is one of the highest values, both for our customers as well as our employees. As a result, we comply with various globally recognised certification and quality control institutions. Many of our products comply with EC ATEX directives for equipment intended for used in explosive and hazardous environments.

The aseptic series is EHEDG certified (European Hygienic Engineering & Design Group) and the pharmaceutical series has USP VI and EC 1935/2004 approval.

All of our products are clearly CE marked and followed by our comprehensive instruction manuals. Tapflo manufacturing process is certified according to ISO 9001:2015.



Our values

■ Long term engagement is our core

Our aim is to continuously provide premium products according to the evolving needs of our customers. That is why we see each customer relationship as a long term commitment.

■ Local means on your terms

Tapflo is your global partner providing local support. No matter where your plant is located, you can expect us to support you locally.

■ Flexibility the foundation of good service

We are prepared to deal with reality, knowing that in practice this means answering questions, offering solutions and supplying spare parts with a minimal loss of time.

■ Customising to bring the product to the needs

Our intention is always to help our clients find the most cost effective solutions to increase their company's efficiency.

If this means changing the design of the pump, we see it as a challenge - not a problem.

■ To produce is to develop

Being actively involved in the manufacturing of a product, it is almost impossible not to discover ways to improve it.

This allows us to frequently offer solutions that are even more sustainable and efficient.

Hygienic pumping

when it comes to being clean

Whether you are handling food, beverages, cosmetics, pharmaceuticals or biotech products the fundamentals are very basic – the process equipment shall not contaminate the handled product and it shall be cleanable in desired way. So how will you be able to determine if your equipment such as pumps is safe and fulfills your requirements? A number of standards and directives for hygienic equipment are applicable. In this brochure you will learn more about them and how we have incorporated them in our hygienic product range.

The chart on the next pages gives you a brief introduction to applicable directives, norms and regulations and how they are incorporated in our pump range.



Food & beverage industry



**Pharmaceutical
& biotechnology industry**



Cosmetic industry

Providing accurate pumps to

✓ = standard ✓ = option

* Certificate delivered with the pump (for other- on request)



USP VI approved materials

U.S. Pharmacopeial Convention (USP) class I to VI defines how a plastic or rubber material may be exposed of human tissue. Class VI requires the most stringent testing and such materials may be used for example in implant devices.



EHEDG certified products

The EHEDG (European Hygienic Engineering & Design Group) certificate proves that the design is according to the hygienic guidelines. Furthermore certified products are clean ability tested.



FDA §21 CFR 177 materials

FDA (U.S. Food and Drug Administration) §21 CFR 177 lists polymers, e.g. rubber and plastic materials approved for equipment in contact with food products.

EN 10204

EN 10204 material traceability

The EN 10204 norm gives you a checklist and traceability of materials used in the equipment. 2.1 is a general statement of compliance with material specifications, while 3.1 provides specific track records all the way to the steel mill batch (normally only on metals in contact with the product).



EC 1935/2004 regulation

This EU regulation applies to all food contact materials, e.g. metals, plastics and rubber materials. It requires that these materials are safe, are labeled with the glass-and-fork symbol, are traceable throughout the production chain (according to above EN 10204) and that they are produced according to good manufacturing practice (GMP).



CE conformance

A product classified as machinery that carries the CE mark fulfill the essential health and safety requirements of the EC Machinery Directive 2006/42/EEC.



ATEX Directive 2014/34/EC

Equipment intended and approved for safe operation in potentially explosive atmospheres. The equipment is divided in main groups, categories, apparatus groups and temperature classes to define its suitability in the actual zone.

AODD Diaphragm pumps



Pharmaceutical











EHEDG pumps



Sanitary pumps



fulfill your needs

		Pulsation dampeners	Centrifugal pumps			Hose pumps	
							
Metal pumps	PE & PTFE pumps	Sanitary dampeners	CTH pumps	CTM pumps	CTS-H pumps	PT pumps	PTL pumps
		✓	✓		✓		
		✓					
✓	✓	✓	✓		✓	✓	✓
✓	✓	✓	✓		✓	✓	✓
		✓	✓		✓	✓	✓
✓	✓	✓	✓	✓	✓	✓	✓
✓	✓	✓	✓		✓	✓	

Integrated into your plant

Clean water

Clean water or so called deionized water (clean water free from carbon molecules) is used widely in food and pharmaceutical processing plants. Extremely important here is using 316L (low carbon) steel. Use of normal 316 will cause "picking" inside the pump when carbon molecules are "stolen back" by the deionized water. This will turn deionized water to normal water, the process will fail and also the pump will be destroyed. **The solution is using the Tapflo CTH centrifugal pump that always come with 316L wetted materials and optionally sintered (pure) silicon carbide seals.**



CIP feeding pump

CIP cleaning

CIP cleaning (Clean In Place) is an automatic cleaning system where the pipe system with its pumps, valves and other equipment is flushed with a cleaning liquid, all while the system is assembled. To obtain sufficient cleanliness, the CIP flow speed in the system is minimum 1.5 to 2.0 m/s, relatively low back pressure up to 1 bar is required. **Tapflo CTH range is commonly used as CIP pump for pipe systems from 3/4" up to 4" (DN 15 up to DN 100). For the concentrated cleaning chemicals, small sized 3/8" or 1/2" plastic diaphragm pumps are typically used.**

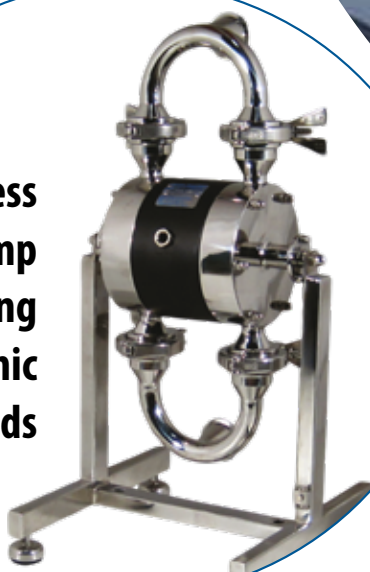


CIP preparation pump



CIP return pump

Process pump for handling hygienic liquids



SIP cleaning

SIP cleaning, Sterilize In Place is widely used in pharmaceutical industry, but becomes more and more popular also in food and beverage industries. Two methods are used for SIP, either the classic steam injection where basically no pumps are required, or liquid sterilization in closed pressurized (2 bar) system. This second method saves process equipment like pumps from dry running, saving costs and life of mechanical seals etc.

handling liquids in hygienic industries

refining your process

In your production plant there are numerous of pump applications. Main focus is probably pumps for the ready products and clean water, however there are also just as much needs of pumps for ingredients, additives and auxiliary applications like detergents, chemicals and solvents.

Whichever part of your process, we will provide the suitable pump solution.

Moving the product

The above mentioned applications are keystones in almost all food-beverage and pharmaceutical processes. However pumping the ready product is usually the greatest challenge. The first challenge is that the nature of the product might be demanding for process equipment like pumps; high viscosity, big solids or abrasive ingredients. The second challenge is that the product shall maintain its shape and nature after the process, without any destroying of solids, shearing or contamination. For these types of duties, a cleanable pump design, selection of materials and traceability are crucial. CTH centrifugal pumps, sanitary and EHEDG diaphragms pumps and PT/PTL hose pumps are used.



Application examples food & beverage

World famous food & beverage producers as well as smaller local makers use Tapflo pumps in their processes. These two pages show a selection of them.

Some of our customers:

- Kraft
- Nestle
- Coca Cola
- Carlsberg
- Unilever
- Danone



» **Pumped media**
Sugar and starch syrups – chocolate products

» **Pump**
TJ125 STT sanitary pump with heating jacket

» **Application description**
Transfer at ambient temperature



» **Pumped media**
Vanilla custard - dairy products

» **Pump**
T244 STT aseptic EHEDG diaphragm pump

» **Application description**
Transfer to filling machine, ambient temperature



» **Pumped media**
Curd chesse - dairy products

» **Pump**
T425 SWT sanitary diaphragm pump

» **Application description**
Filling of packing machine, 9 mm grain contents, ambient temperature



» **Pumped media**
Chocolate glaze for ice cream – dairy products

» **Pump**
CTH BB hygienic centrifugal pump

» **Application description**
Emptying of ice cream machine

Application examples biotech, pharmaceutical & cosmetics

Some of the most exclusive Tapflo pumps are used in multinational pharma-, biotech- and cosmetic industries.

Some of our customers:

- Glaxo Smith Kline
- Astra Zeneca
- Pfizer
- Eli Lilly
- Novartis



- » **Pumped media**
Oils and ethanol
- » **Pump** T80 STT
sanitary diaphragm pump
- » **Application description**
Pumping from tanks, transport and dosing



- » **Pumped media**
Solvent pumping
- » **Pump**
TX120 STT industrial stainless steel diaphragm pump
- » **Application description**
Mobile unit for solvent pumping, with nitrogen pipe purge system



- » **Pumped media**
Mushroom culture organic suspension
- » **Pump** CTH CE
hygienic centrifugal pump and TX30 STT
sanitary diaphragm pump
- » **Application description**
Unloading from fermentation process reactor (CTH pump) and emptying of mushroom culture sediments (TX30 pump)



- » **Pumped media**
Shampoos and liquid soaps
- » **Pump** T125 STS
sanitary diaphragm pump
- » **Application description**
Transfer of shampoos and liquid soaps directly to filling machines

Air Operated Diaphragm Pumps

meeting your needs with versatile

■ Fast Facts

Capacity
Pressure
Sizes

0-820 l/min (216 US gpm)

0 – 8 bar (116 psi)

Sanitary 1" up to 3"

EHEDG DN40 - DN65

Plastic 1/8" up to 3"

Materials

PE, PTFE, and stainless steel AISI 316L (other material on request)



■ Major Benefits Centrifugal Pumps:



Pollution free and non-stalling air valve



Self-priming and able to run dry without damage



Very easy to control capacity and pressure by regulating air pressure and flow



Hygienic smooth surface and long life diaphragms

Aseptic EHEDG series pumps

Keeping your process clean.

The EHEDG aseptic series AODD pumps are designed to pump food products, cosmetics or pharmaceuticals. This EHEDG (European Hygienic Engineering & Design Group) series is certified by the Danish Technological Institute and it guarantees that the design and selected materials are according to the guidelines. Apart from the design approval, the series has also been clean ability tested and approved.

The pumps are made from AISI 316L stainless steel with mirror polished surface finish Ra < 0.8 (standard) or Ra < 0.4 upon request. Plastics and rubbers are FDA and USP VI approved. The pumps are designed for cleaning and sterilization in place (C.I.P. and S.I.P.).

3.1 trace ability documents will always follow when you receive your Tapflo EHEDG aseptic pump.

Sanitary series pumps

Hygienic design - made from electropolished stainless steel AISI 316L to meet the requirements in hygienic installations.

This pump series is sanitary designed with wetted metal parts in electro polished stainless steel AISI 316L, with possibility of extra fine surface finish Ra 0.8. Plastics and rubbers are FDA approved. The pumps are designed for cleaning and sterilization in place (C.I.P. and S.I.P.). Furthermore the manifold clamp connections and housing screws make it quick and easy to dismantle and manually clean the pumps internally.



PE & PTFE series pumps



Tapflo pumps made from polyethylene (PE) or PTFE are suitable for handling almost any kind of liquid whether it is viscous, chemically aggressive or with solids.

Pumps made of polyethylene (PE HD) or virgin PTFE plastics handle all kind of chemicals, in food and beverage industries they are mainly used for pumping C.I.P. chemicals. In pharmaceutical industries they handle all types of raw chemicals. The pumps are available also in explosion proof ATEX-marked versions.

Metal series pumps

Molded industrial pumps in glass blast stainless steel AISI 316L, typically used for raw chemicals, solvents and waste applications. The pumps are available also in explosion proof ATEX-marked versions.

Available options:

Heating jacket is available on the sanitary pumps, typically used in chocolate and glaze applications

Flap valves is an option on sanitary pumps, the perfect solution for gentle pumping of big size solids up to 48 mm.

Pneumatic systems are available for all our diaphragm pumps, adding increased safety by automatic control and monitoring:

- » Diaphragm rupture guardian system
- » Dead head and dry run guardian system
- » Batch control
- » Level control
- » Start & stop units



Options



■ Flap valves - big solids handling up to 100 mm in diameter



■ Ball cup valves - for easy valve seat replacement when pumping abrasive liquids



■ Magnetic ball lifters - full pump drainability without disconnecting it from the installation

Sanitary active pulsation dampeners:

The sanitary series of Tapflo dampeners has been designed in particular for food, beverage, pharmaceutical and cosmetic industries where cleanliness and sterile environment is necessary.

Made to be clean

The dampener is designed and prepared for cleaning and sterilization in place – C.I.P. and S.I.P. These are automatic cleaning and disinfection procedures implemented in these industries so it is essential that our products are prepared to comply with these procedures.



Intelligent pumps - TC series



TC Intelligent pumps are fitted with ingenious LEAP® technology developed by Tapflo.

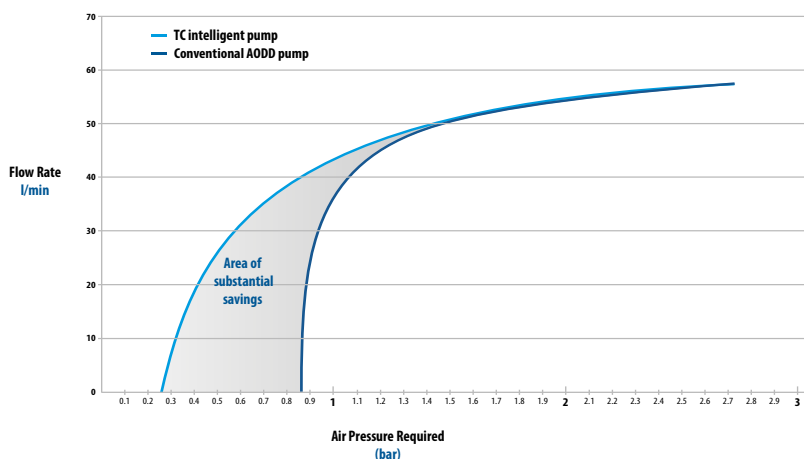
LEAP® or 'Low Energy Air Pump' is a patented technology used in AODD pumps to reduce the minimum operating air pressure by reducing internal losses and friction found in conventional AODD pumps.

LEAP uses a unique indirect system to detect the position of the diaphragm shaft controlling the diaphragm movement automatically.

■ Features & Benefits

- ✓ **Available in Plastic, Metal and Sanitary series AODD pumps**
TC50 - TC425 (T50 - T425 equivalent)
- ✓ **Retrofit**
Leap can be fitted to any existing Tapflo Air Operated Diaphragm Pumps
- ✓ **Batch Dispensing**
allowing the pump to automatically stop after the required volume has been dispensed.
- ✓ **Improved Lifespan**
the TC series uses an air valve that has a significantly longer life expectancy over rubber seal technology.
- ✓ **Dry Running**
by analysing the frequency of pulses, the pump can analyse when it is running dry.
- ✓ **Noise Reduction**
ability to utilise lower air pressure reduces the noise of the pump
- ✓ **Electrical feedback**
signal allows for external monitoring of the pump process.
- ✓ **Improved Maintenance**
main air valve can be changed in under two minutes without the removal of the pump from the process line.
- ✓ **Control Simplification**
no need for an external pneumatic solenoid valve, reducing costs and simplifying control.
- ✓ **Dead Heading**
as with dry running, the frequency of pulses can be monitored, alerting if the pump has a blockage.

Graph showing fluid flow against air pressure required



The pump fitted with LEAP® Technology is able to **start pumping at 0.3 bar without stalling**, in test the pump was already achieving flow rates of **70% of its maximum open end flow before other pumps had even started.**

Centrifugal pumps

■ Fast Facts Centifugal Pumps

Capacity	1-60 m ³ /h (264 US gpm)
Head	2 – 47 m (154 ft)
Sizes	¾" up to 2 ½", 0.12– 11 kW
Materials	PP, PVDF and stainless steel AISI 316L

■ Major Benefits Centrifugal Pumps:

- ✓ The centrifugal principle gives a very high capacity
- ✓ Big choice of sealing face materials
- ✓ Pumps made from AISI 316L, ideal for any food contact applications
- ✓ Many options available, see below

Our centrifugal pumps are very efficient, pumping low and medium viscous liquids with high capacity in relation to the size of the pumps. Mechanical sealed pumps in stainless steel, as well as seal less pumps in plastics PP and PVDF are available.

CTH centrifugal pumps



This hygienic single mechanical sealed pump series is supplied with electro polished Ra 0.8 pump casing and internals. This pump series is especially dedicated for hygienic duties in food and beverage industries. A wide range of sealing face materials are available – ceramic, graphite, SiC and with o-rings in FDA approved EPDM, FKM or FEP.

A number of special executions are available:

- » Heating jacket – Great protection for the mechanical seal in applications with risk of solidification, example chocolate glaze, paraffin, starch, glucose syrup and margarine etc.
- » Hygienic shroud – Easier to keep the pump externals clean, protects the motor from spraying water.
- » Casing drainage – By positioning the outlet horizontal at the bottom, or by means of a drain connection the pump features a hygienic and automatic draining.
- » Long coupled – The perfect solution for hot products like eatable oils



CTM magnetic drive centrifugal pumps

These nonmetallic magnetic drive centrifugal pumps are ideal for low viscous chemicals. Made from either PP or PVDF, they safely handle concentrated C.I.P. chemicals.



CTS-H self-priming centrifugal pumps

These open impeller self-priming centrifugal pumps, manufactured with excellent electro polished surfaces, FDA approved seals, high finish and mechanical strength, meet the demands from food and sanitary applications.

Hose pumps

meeting your needs with versatile

■ Fast Facts Peristaltic Pumps

Capacity	PT: up to 88 m³/h (387 US gpm) PTL: up to 10 m³/h (44 US gpm)
Pressure	PT: up to 15 bar (218 psi) PTL: up to 4 bar (58 psi)
Sizes	PT: 5 up to 125 mm hose PTL: 9 up to 45 mm hose
Hose materials	PT: NR, NR food (FDA), NBR, NBR food (FDA), EPDM, Hypalon, FKM PTL: Neoprene, Norprene, Silicone, Pharmed, Hypalon, EPDM, NR, NBR



■ Major Benefits Peristaltic Pumps:

- ✓ Easy maintenance, hose is only worn component
- ✓ Long hose life with unique hose composition
- ✓ Great choice of food approved hose materials
- ✓ Able to pump high viscous products
- ✓ Self-priming up to 9.8 m
- ✓ Reversible flow

PT and PTL peristaltic pumps - hose pumps

The high pressure PT series allows pressures up to 15 bar, while PTL is the low pressure series with max pressure 4 bar.



Tapflo can offer food grade hoses in EPDM FDA, NBR FDA and NR FDA and meet the certifications EC 1935/2004 and FDA CFR21§177.2600.

The internal of the hose is white (NR FDA and EPDM FDA) or black (NBR FDA), according to the pumped fluid.

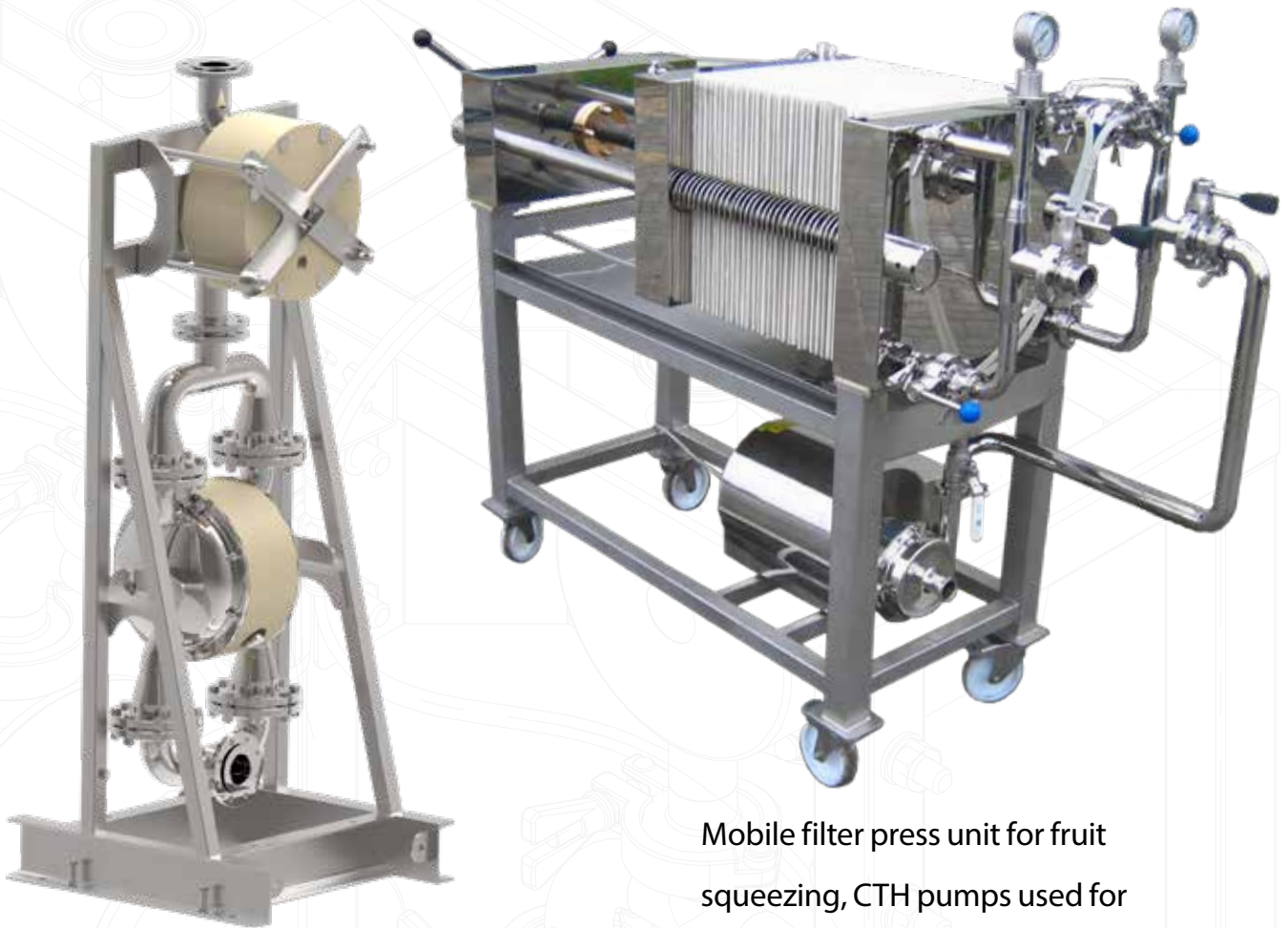


Engineering to order

TAPFLO BRINGS FUNCTIONALITY

When it comes to designing and building a product, Tapflo Group has the skills to make ETO setups. Engineer-to-order (ETO) approach shows Tapflo Group ability to create a product based on very specific customer requirements. Because the end product tends to be complex, customers engage with the ETO of Tapflo Group throughout the entire design and manufacturing phases to ensure their specifications are met.

Tailor made pump systems



Mobile filter press unit for fruit squeezing, CTH pumps used for pumping fruit juice to storage tanks.

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Tapflo products and services are available in 75 countries on 6 continents.

Tapflo is represented worldwide by own Tapflo Group Companies and carefully selected distributors assuring highest Tapflo service quality for our customers' convenience.

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